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2612

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Restriction

1. Applicant's election with traverse of Group I in the reply filed on August 1, 2005, is acknowledged. The traversal is on the grounds that all of the claims can be searched simultaneously. This is not found persuasive because zooming lenses are found in a subclass other than the ones required for Group I.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 9, 10, 13, and 14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction requirement in the reply filed on August 1, 2005.

Specification

3. The abstract of the disclosure is objected to because it includes the phrase "is disclosed". Correction is required. See MPEP § 608.01(b).

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

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5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

6. Claims 18-21 are objected to because claim 18 includes a typographical error — “changing and F-number” — on line 7. Appropriate correction is required.

Claims 19-21 are objected to because they are dependent on claim 18.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamazaki (U.S. Patent Application Publication No. 2001/0048474).

Regarding **claim 5**, Yamazaki discloses an optical apparatus (see Figure 3), comprising:

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a photographic optical unit (taking lens 12) including a movable optical component for varying a focal length (see paragraph 80);

a light amount adjusting unit (iris diaphragm 26) disposed in an optical path of said photographic optical unit, said light amount adjusting unit varying an aperture to adjust an amount of light and changing an F-number by varying said aperture (see paragraph 81);

an image pickup device (solid-state imaging device 28) for picking up an optical image formed by said photographic optical unit;

a mode switching member (operating part 46) for selecting a dynamic image taking mode and a static image taking mode (see paragraphs 74-75); and

a controller for controlling the variation in said aperture of said light amount adjusting unit (control CPU 32; see paragraph 80);

wherein said controller sets different values of said F-number of said light amount adjusting unit at the same focal length of said photographic optical unit in accordance with a state selected by said mode switching member (see paragraphs 126, 127, 139, and 140).

Regarding **claim 6**, Yamazaki discloses:

when said mode switching member selects said static image taking mode (at step S410 in Figure 13), said controller sets an F-number for a maximum aperture of said light amount adjusting unit in said static image taking mode to be larger than an F-number for a maximum aperture of said light amount adjusting unit in said dynamic image taking mode at said fixed focal length of said

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photographic optical unit (the F-number for a maximum aperture in the “formal”, or still, mode is 2.8. which is greater than the F-number for a maximum aperture in the moving mode, which is 1.4; see paragraphs 126-127).

Regarding **claim 7**, Yamazaki discloses:

when said mode switching member selects said static image taking mode (at step S610 in Figure 15), said controller sets an F-number for a minimum aperture of said light amount adjusting unit in said static image taking mode to be smaller than an F-number for a minimum aperture of said light amount adjusting unit in said dynamic image taking mode at said fixed focal length of said photographic optical unit (the F-number for a minimum aperture in the “formal”, or still, mode is 8. which is less than the F-number for a minimum aperture in the moving mode, which is 11; see paragraphs 139-140).

9. Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Misawa (U.S. Patent No. 5,444,482).

Regarding **claim 11**, Misawa discloses an optical apparatus (see Figure 1), comprising:

a photographic optical unit (optical lens 10) having an optical axis;
an image pickup device (image sensor 12) for picking up an optical image formed by said photographic optical unit, said image pickup device having a first image size area (area 402 in Figure 4B) for performing image pickup and a second image size area (area 400) for performing image pickup including said first image size area and larger than said first image size area;

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a mode switching member (shutter release button mechanism 28) for selecting a dynamic image taking mode and a static image taking mode (movie picture mode and still picture mode, respectively; see column 6, lines 15-37); and

a controller (control processor 20) for controlling image pickup of said image pickup device (see column 4, lines 9-10);

wherein said controller switches between said first image size area and said second image size area in accordance with a state selected by said mode switching member (see column 10, lines 37-62).

Regarding **claim 12**, Misawa discloses:

said controller switches to said first image size area when a state selected by said mode switching member is said dynamic image taking mode, and said controller switches to said second image size area when a state selected by said mode switching member is said static image taking mode (see column 6, lines 15-37, and column 10, lines 37-62).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (U.S. Patent No. 4,558,368).

Regarding **claim 1**, Aoki discloses an optical apparatus (see Figure 1), comprising:

a photographic optical unit (lens elements 12a and 12b);

a light amount adjusting unit (diaphragm opening and closing mechanism 13) disposed in an optical path of said photographic optical unit, said light amount adjusting unit varying an aperture (shown in the center of Figure 3) to adjust an amount of light and changing an F-number by varying said aperture (see column 2, line 61, through column 3, line 3);

an image pickup device (image sensor 16) for picking up an optical image formed by said photographic optical unit;

a mode switching member (still/video switching circuit 21) for selecting a dynamic image taking mode (video mode; see column 3, line 55, through column

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4, line 13) and a static image taking mode (still picture photographing mode; see column 4, lines 18-54); and

a controller (diaphragm drive circuit 24) for controlling the variation in said aperture by said light amount adjusting unit (see column 3, lines 8-11);

wherein said controller sets different values of said F-number of said light amount adjusting unit in accordance with a state selected by said mode switching member (see column 3, line 18, through column 4, lines 13).

Aoki is silent with regard to the specifics of the lenses' focal length.

Official Notice is taken that it is well known in the art to fix camera focal lengths. An advantage of having a fixed focal length is that the camera is simpler, resulting in a lower cost. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Aoki's imaging device include a lens with a fixed focal length.

Regarding **claim 5**, Aoki discloses an optical apparatus (see Figure 1), comprising:

a photographic optical unit (lens elements 12a and 12b);

a light amount adjusting unit (diaphragm opening and closing mechanism 13) disposed in an optical path of said photographic optical unit, said light amount adjusting unit varying an aperture (shown in the center of Figure 3) to adjust an amount of light and changing an F-number by varying said aperture (see column 2, line 61, through column 3, line 3);

an image pickup device (image sensor 16) for picking up an optical image formed by said photographic optical unit;

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a mode switching member (still/video switching circuit 21) for selecting a dynamic image taking mode (video mode; see column 3, line 55, through column 4, line 13) and a static image taking mode (still picture photographing mode; see column 4, lines 18-54); and

a controller (diaphragm drive circuit 24) for controlling the variation in said aperture by said light amount adjusting unit (see column 3, lines 8-11);

wherein said controller sets different values of said F-number of said light amount adjusting unit in accordance with a state selected by said mode switching member (see column 3, line 18, through column 4, lines 13).

Aoki is silent with regard to the specifics of the lenses' focal length.

Official Notice is taken that variable focal lengths are well known in the art. An advantage of having a variable focal length is that an appropriate focus can be effected. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Aoki's imaging device include a lens with a variable focal length.

13. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki in view of Yamazaki.

Claim 2 may be treated like claim 1. However, Aoki is silent with regard to setting a maximum aperture for static and dynamic image-taking modes.

Yamazaki discloses a camera, wherein:

when said mode switching member selects said static image taking mode (at step S410 in Figure 13), said controller sets an F-number for a maximum

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aperture of said light amount adjusting unit in said static image taking mode to be larger than an F-number for a maximum aperture of said light amount adjusting unit in said dynamic image taking mode at said fixed focal length of said photographic optical unit (the F-number for a maximum aperture in the “formal”, or still, mode is 2.8. which is greater than the F-number for a maximum aperture in the moving mode, which is 1.4; see paragraphs 126-127).

As stated in paragraphs 123-125, an advantage of using a larger maximum aperture for a moving-picture mode is that a still image may be set up — even though no flash is present — without requiring a gain increase, which would result in increased noise. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Aoki’s device use a larger maximum aperture for the motion mode than for the still mode.

Claim 3 may be treated like claim 1. However, Aoki is silent with regard to setting a minimum aperture for static and dynamic image-taking modes.

Yamazaki discloses a camera, wherein:

when said mode switching member selects said static image taking mode (at step S610 in Figure 15), said controller sets an F-number for a minimum aperture of said light amount adjusting unit in said static image taking mode to be smaller than an F-number for a minimum aperture of said light amount adjusting unit in said dynamic image taking mode at said fixed focal length of said photographic optical unit (the F-number for a minimum aperture in the “formal”, or still, mode is 8. which is less than the F-number for a minimum aperture in the moving mode, which is 11; see paragraphs 139-140).

As stated in paragraphs 136-138, an advantage of using a smaller minimum aperture for a moving-picture mode is that a still image may be set up with a minimum of smear. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Aoki's device use a smaller minimum aperture for the motion mode than for the still mode.

14. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Misawa in view of Inou (U.S. Patent no. 5,982,421).

Regarding **claim 15**, Misawa discloses an optical apparatus (see Figure 1), comprising:

a photographic optical unit (optical lens 10) having an optical axis;

an image pickup device (image sensor 12) for picking up an optical image formed by said photographic optical unit, said image pickup device having a first image size area (area 402 in Figure 4B) for performing image pickup and a second image size area (area 400) for performing image pickup including said first image size area and larger than said first image size area;

a mode switching member (shutter release button mechanism 28) for selecting a dynamic image taking mode and a static image taking mode (movie picture mode and still picture mode, respectively; see column 6, lines 15-37); and

a controller (control processor 20) for controlling image pickup of said image pickup device (see column 4, lines 9-10);

wherein said controller switches between said first image size area and said second image size area of said image pickup device in accordance with a state selected by said mode switching member (see column 10, lines 37-62).

Misawa is silent with regard to including a correcting optical component.

Inou discloses an image pickup apparatus (see Figure 4), including:

a correcting optical component (variable angle prism 101) provided on said optical axis of a photographic optical unit (lenses 104-106), said correcting optical component being driven to incline said optical axis for correcting a blur of an image (see column 8, lines 32-46);

wherein, when said correcting optical component is driven, said controller switches between said first image size area and said second image size area of said image pickup device (an appropriate sub-area — which, in order to function, is a area variably selected from the entire area — is read out by memory-reading controlling circuit 121; see column 9, lines 46-65).

As stated in column 12, line 55, through column 13, line 8, an advantage of utilizing both a correcting optical component and a selected image size area is that each component can compensate for the weaknesses of the other. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Misawa's imaging device include a correcting optical component, as described by Inou.

Regarding **claim 16**, Misawa discloses:

said controller switches to said first image size area when a state selected by said mode switching member is said dynamic image taking mode, and said

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controller switches to said second image size area when a state selected by said mode switching member is said static image taking mode (see column 6, lines 15-37, and column 10, lines 37-62).

As described above, Inou discloses using the sub-area in addition to the optical correction occurs.

Regarding **claim 17**, Misawa discloses:

said controller switches to said first image size area when a state selected by said mode switching member is said dynamic image taking mode (see column 6, lines 15-37, and column 10, lines 37-62).

As described above, Inou discloses a complementary optical correction system.

Additionally, Inou discloses:

when said image blur cannot be corrected only by the driving of said correcting optical component, said controller changes a position of said first image size area on said second image size area to correct said image blur in addition to the driving of said correcting optical component (see column 11, lines 40-54).

As stated in column 12, line 55, through column 13, line 8, an advantage of utilizing both a correcting optical component and a selected image size area is that each component can compensate for the weaknesses of the other. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Misawa's imaging device include a correcting optical component, as described by Inou.

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15. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki in view of Misawa and Inou.

Regarding **claim 18**, Aoki discloses an optical apparatus (see Figure 1), comprising:

a photographic optical unit (lens elements 12a and 12b);

a light amount adjusting unit (diaphragm opening and closing mechanism 13) disposed in an optical path of said photographic optical unit, said light amount adjusting unit varying an aperture (shown in the center of Figure 3) to adjust an amount of light and changing an F-number by varying said aperture (see column 2, line 61, through column 3, line 3);

an image pickup device (image sensor 16) for picking up an optical image formed by said photographic optical unit;

a mode switching member (still/video switching circuit 21) for selecting a dynamic image taking mode (video mode; see column 3, line 55, through column 4, line 13) and a static image taking mode (still picture photographing mode; see column 4, lines 18-54); and

a light amount controller (diaphragm drive circuit 24) for controlling the variation in said aperture by said light amount adjusting unit (see column 3, lines 8-11), said light amount controller setting different values of said F-number of said light amount adjusting unit in accordance with a state selected by said mode switching member (see column 3, line 18, through column 4, lines 13).

Aoki is silent with regard to including a plurality of image size areas. Misawa discloses an optical apparatus (see Figure 1), comprising:

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an image pickup device (image sensor 12) for picking up an optical image formed by a photographic optical unit, said image pickup device having a first image size area (area 402 in Figure 4B) for performing image pickup and a second image size area (area 400) for performing image pickup including said first image size area and larger than said first image size area;

a mode switching member (shutter release button mechanism 28) for selecting a dynamic image taking mode and a static image taking mode (movie picture mode and still picture mode, respectively; see column 6, lines 15-37); and

an image pickup controller (control processor 20) for controlling image pickup of said image pickup device (see column 4, lines 9-10), said image pickup controller switches between said first image size area and said second image size area of said image pickup device in accordance with a state selected by said mode switching member (see column 10, lines 37-62).

As stated in column 11, lines 31-43, an advantage of including a plurality of image size areas is that both still and motion images may be captured. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Aoki's system include the multiple image areas described by Misawa.

Aoki is silent with regard to including a variable focal length, wherein an image size area is changed when an optical component changing the focal length is driven.

Inou discloses an imaging device with a variable focal length (produced by lenses 104-106), that performs:

switching between a first image size area and second image size area (as read from a field memory; see column 11, lines 40-43, and column 13, lines 59-63) of an image pickup device when said movable optical component is driven (see column 13, line 59, through column 14, line 5).

As stated in column 15, lines 15-34, an advantage of modifying first and second image size areas (as read out for a memory) is that image-shake correction commensurate with a current focal length can be effected. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Aoki's system switch image size areas upon the driving of a focal-length controlling device, as described by Inou.

Regarding **claim 19**, Misawa discloses:

said controller switches to said first image size area when a state selected by said mode switching member is said dynamic image taking mode, and said controller switches to said second image size area when a state selected by said mode switching member is said static image taking mode (see column 6, lines 15-37, and column 10, lines 37-62).

As described above, Inou discloses using the sub-area in addition to the optical correction occurs.

16. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki in view of Misawa and Inou and further in view of Yamazaki.

Claim 20 may be treated like claim 18. However, Aoki is silent with regard to setting a maximum aperture for static and dynamic image-taking modes.

Yamazaki discloses a camera, wherein:

when said mode switching member selects said static image taking mode (at step S410 in Figure 13), said controller sets an F-number for a maximum aperture of said light amount adjusting unit in said static image taking mode to be larger than an F-number for a maximum aperture of said light amount adjusting unit in said dynamic image taking mode at said same focal length of said photographic optical unit (the F-number for a maximum aperture in the “formal”, or still, mode is 2.8. which is greater than the F-number for a maximum aperture in the moving mode, which is 1.4; see paragraphs 126-127).

As stated in paragraphs 123-125, an advantage of using a larger maximum aperture for a moving-picture mode is that a still image may be set up — even though no flash is present — without requiring a gain increase, which would result in increased noise. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Aoki’s device use a larger maximum aperture for the motion mode than for the still mode.

Claim 21 may be treated like claim 18. However, Aoki is silent with regard to setting a minimum aperture for static and dynamic image-taking modes.

Yamazaki discloses a camera, wherein:

when said mode switching member selects said static image taking mode (at step S610 in Figure 15), said controller sets an F-number for a minimum aperture of said light amount adjusting unit in said static image taking mode to be smaller than an F-number for a minimum aperture of said light amount adjusting unit in said dynamic image taking mode at said same focal length of said

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photographic optical unit (the F-number for a minimum aperture in the “formal”, or still, mode is 8. which is less than the F-number for a minimum aperture in the moving mode, which is 11; see paragraphs 139-140).

As stated in paragraphs 136-138, an advantage of using a smaller minimum aperture for a moving-picture mode is that a still image may be set up with a minimum of smear. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Aoki's device use a smaller minimum aperture for the motion mode than for the still mode.

Allowable Subject Matter

17. Claims 4 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding both of these claims, no prior art could be located that teaches or fairly suggests an optical apparatus that varies minimum aperture F-numbers in accordance with a selected static or dynamic image taking mode, wherein an image pickup device has pixels arranged at a pitch that satisfies the claimed equation.

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Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Whipkey, whose telephone number is (571) 272-7321. The examiner can normally be reached Monday through Friday from 9:00 A.M. to 5:30 P.M. eastern daylight time.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu, can be reached at (571) 272-7320. The fax phone number for the organization where this application is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JTW

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October 30, 2005


NGOC-YEN VU
PRIMARY EXAMINER